

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
11 December 2003 (11.12.2003)

PCT

(10) International Publication Number
WO 2003/102740 A3

(51) International Patent Classification⁷: **G06F 17/27**

(21) International Application Number:
PCT/US2003/017499

(22) International Filing Date: 3 June 2003 (03.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/385,500 3 June 2002 (03.06.2002) US

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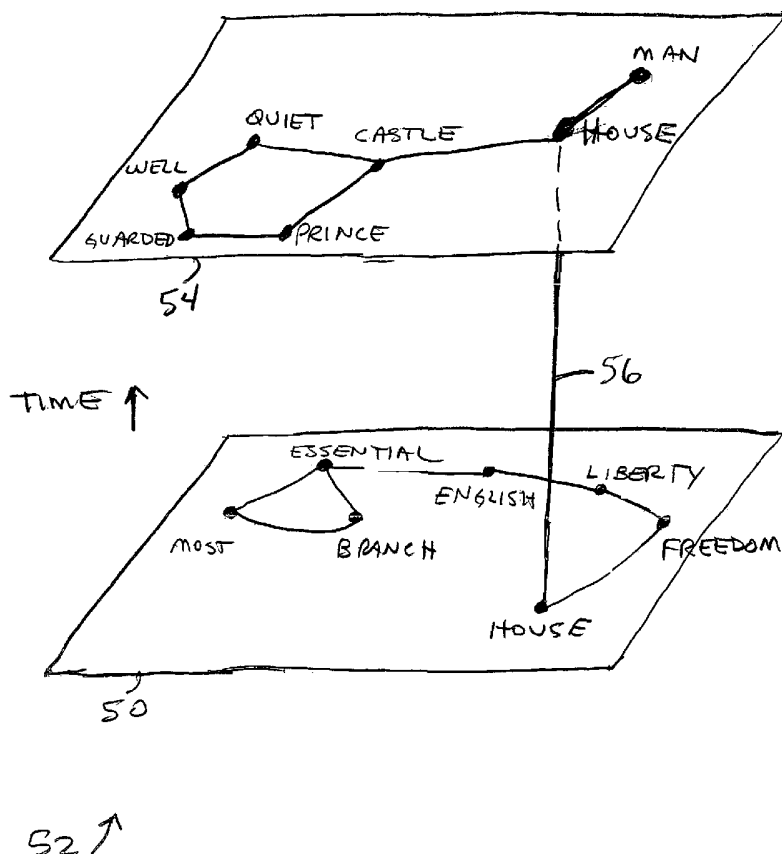
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(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,

[Continued on next page]

(54) Title: SYSTEM AND METHOD OF ANALYZING THE TEMPORAL EVOLUTION OF TEXT USING DYNAMIC CENTERING RESONANCE ANALYSIS



(57) Abstract: A document analysis tool provides a 3-dimensional network representation of temporal evolution of text in a document. First and second portions of text are extracted from one or more documents. The texts are parsed to identify noun phrases. The noun phrases are stemmed to remove word variations. Words from the first portion of the text are linked together to form a first layer in the network. Words from the second portion of the text are linked together to form a second layer in the network. The second layer exists in a different temporal plane from the first layer. Words that are common between the first and second layers are linked together between the first and second layers to provide a visual and analytical representation of relationship between the first and second portions of the text.



ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
22 January 2004

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Internal Application No
PCT/US 03/17499

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F17/27

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CORMAN, S., KUHN, T., MCPHEE, R.D., DOOLEY, K.J.: "Studying Complex Discursive Systems. Centering Resonance Analysis of Communication" HUMAN COMMUNICATION RESEARCH, 'Online! vol. 28, 1 April 2002 (2002-04-01), pages 157-106, XP008024463 Retrieved from the Internet: <URL:http://hcr.oupjournals.org/cgi/conten t/abstract/28/2/157> 'retrieved on 2003-11-14! page 174, line 13 -page 175, line 7 page 176, line 22 -page 177, line 31; example 1 page 178, line 32 -page 179, line 11; examples 4,5 -----	3-5, 11-13, 18-20, 26-28



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

17 November 2003

Date of mailing of the international search report

25/11/2003

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/17499

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 1, 2, 6-10, 14-17, 21-25, 29
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.1

Claims Nos.: 1,2,6-10,14-17,21-25,29

The subject matter of claims 1, 2, 6-11,14-18, 21-26 and 29 is not patentable it contains no technical features. The subject matter of claim 1 furthermore defines a mental act as such, explicitly excluded from patentability under Rule 39.1(iii) PCT.

A person analyzing temporal changes in text would follow the steps of claim 1:

extracting first and second portions of the text;
 -- a person wishing to compare two portions of text would manually extract them

linking the words of the first portion of the text;
 linking the words of the second portion of the text;
 -- linking the words of the text is a straightforward, non-technical task for any person

forming a first layer of a network from the linked words of the first portion of the text;
 forming a second layer of the network from the linked words of the second portion of the text,
 -- distinguishing the pair of networks as layers is a non-technical conceptual choice

wherein the second layer exists in a different temporal plane from the first layer;
 -- a person wishing to analyse temporal change in text would intuitively choose text portions which are temporally distinct and therefore exist in different temporal planes under such a representation

linking words common between first and second layers to provide a representation of relationship between first and second portions of text
 -- any person would link the common words between the two layers to representation of their relationship.

All the steps of the method are mental acts within the meaning of Rule 39.1(iii) PCT.

Furthermore, attention is drawn to document XP008024463 (henceforth termed D1), which outlines Centering Resonance Analysis (CRA) the method upon which the subject matter of claim 1 is based. D1 (page 186, line 20 - page 187, line 16) demonstrates that when provided with the same text as a CRA system, human participants created adjacency matrices comparable to those produced by the CRA system using mental acts alone. The subject matter differs from that in claim one only in that the same technique is extended to providing a relationship between first and second layers of text, which the human participants would carry out in the same way. The overall effect of the method is thus not technical; the claim does not include anything which could involve an inventive step in a field which is not excluded from patentability by Rule 39.1 PCT.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

A person seeking to provide a 3-dimensional network representation of temporal evolution of text would follow the steps of claim 16:

extracting first and second portions of the text;

-- a person wishing to compare two portions of text would manually extract them

linking the words of the first portion of the text to form a first layer in the network; linking the words of the second portion of the text to form a second layer in the network wherein the second layer exists in a different temporal plane from the first layer;

-- linking the words of the text is a straightforward, non-technical task for any person; distinguishing the pair of networks as layers is a non-technical conceptual choice. A person wishing to provide a network representation of temporal evolution would intuitively choose text portions which are temporally distinct and therefore exist in different temporal planes under such a representation

linking words common between first and second layers to provide a representation of relationship between first and second portions of text
-- any person would link the common words between the two layers to representation of their relationship.

All the steps of the method are mental acts within the meaning of Rule 39.1(iii) PCT.

Similarly, only mental acts are required to perform the method of claim 9:

A person seeking to represent evolving text would:

extract first noun phrases from a first text and second noun phrases from a second text;

link the first noun phrases to form a first layer of the network; and connect common noun phrases between first and second layers to provide a representation of relationship between the first and second text

using only his skill and judgement without exercising any technical expertise.

Therefore, all the steps of the method are mental acts within the meaning of Rule 39.1(iii) PCT.

Claim 24 outlines a computer system corresponding to the method claimed in claim 16. The computer system claim does not specify any technical features and furthermore does not define the system in terms of its physical structure, but only in functional terms corresponding to the steps of the method of claim 16. The claimed computer system does not contribute anything more than the art of the method, in spite of the fact that the claim is formulated in a different category. As such, as the method claim is excluded from patentability, so too is the computer system claim (T38/86).

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Dependent claims 2, 6-8, 10, 14, 15, 17, 21-23, 25 and 29 do not contain any technical features and as such constitute mental acts as well. Therefore, the claims are excluded from patentability under Rule 39.1(iii) PCT.